JAN 24 2005
PATENT & TRADEMARK OFFICE

Replacement Sheet
Sheet 1 of 6
Appl. No. 10/084,088; Filed: Feb 28, 2002
Dkt No. 1452.3730000; Group Unit: 2186
Inventor: Martin M. Deneroff
Tel. No.: 202-371-2600
For: Method and System for Cache Coherence in DSM Multiprocessor System Without Growth of the Sharing Vector

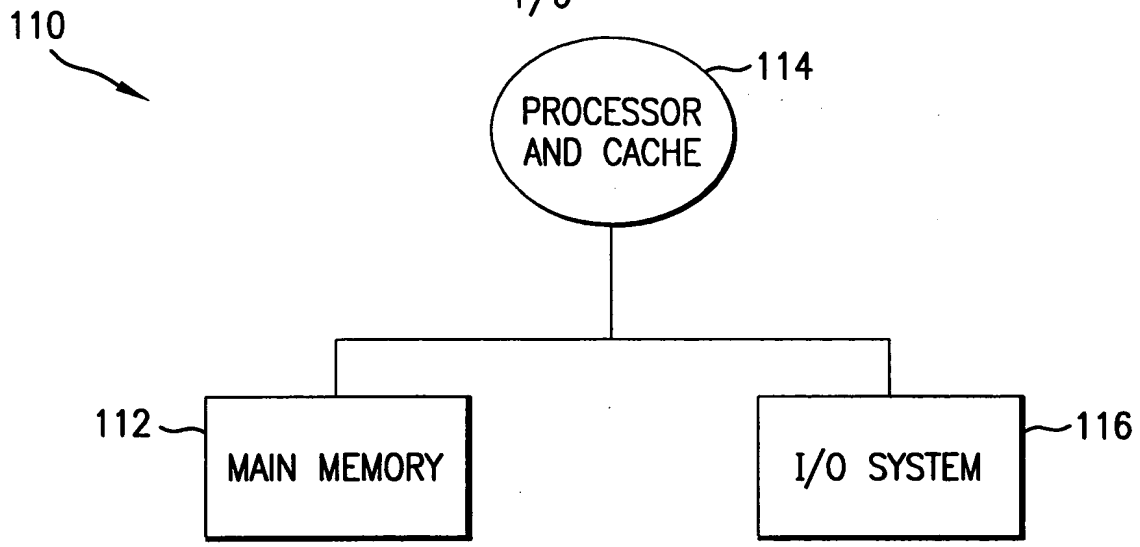

FIG. 1

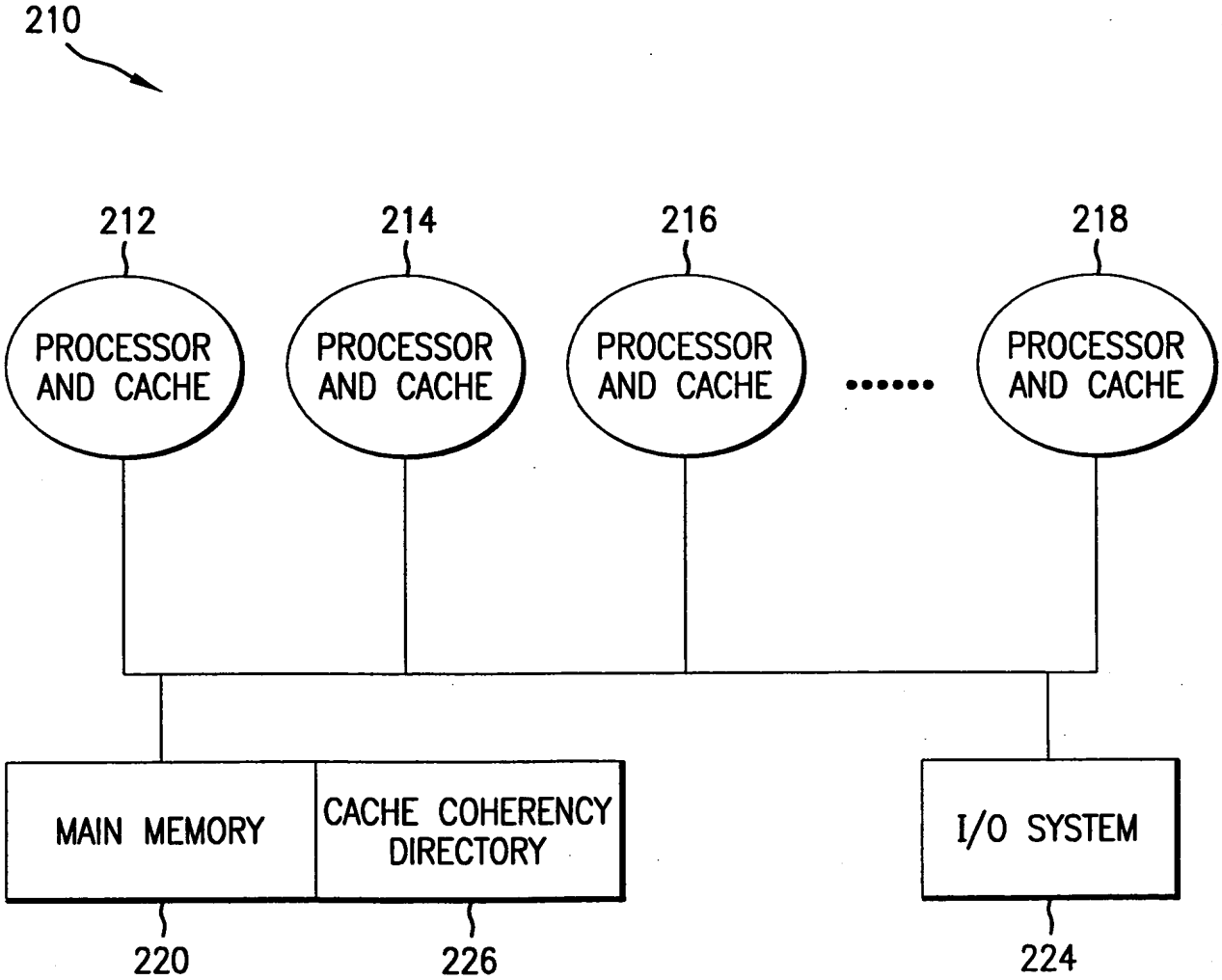

FIG. 2

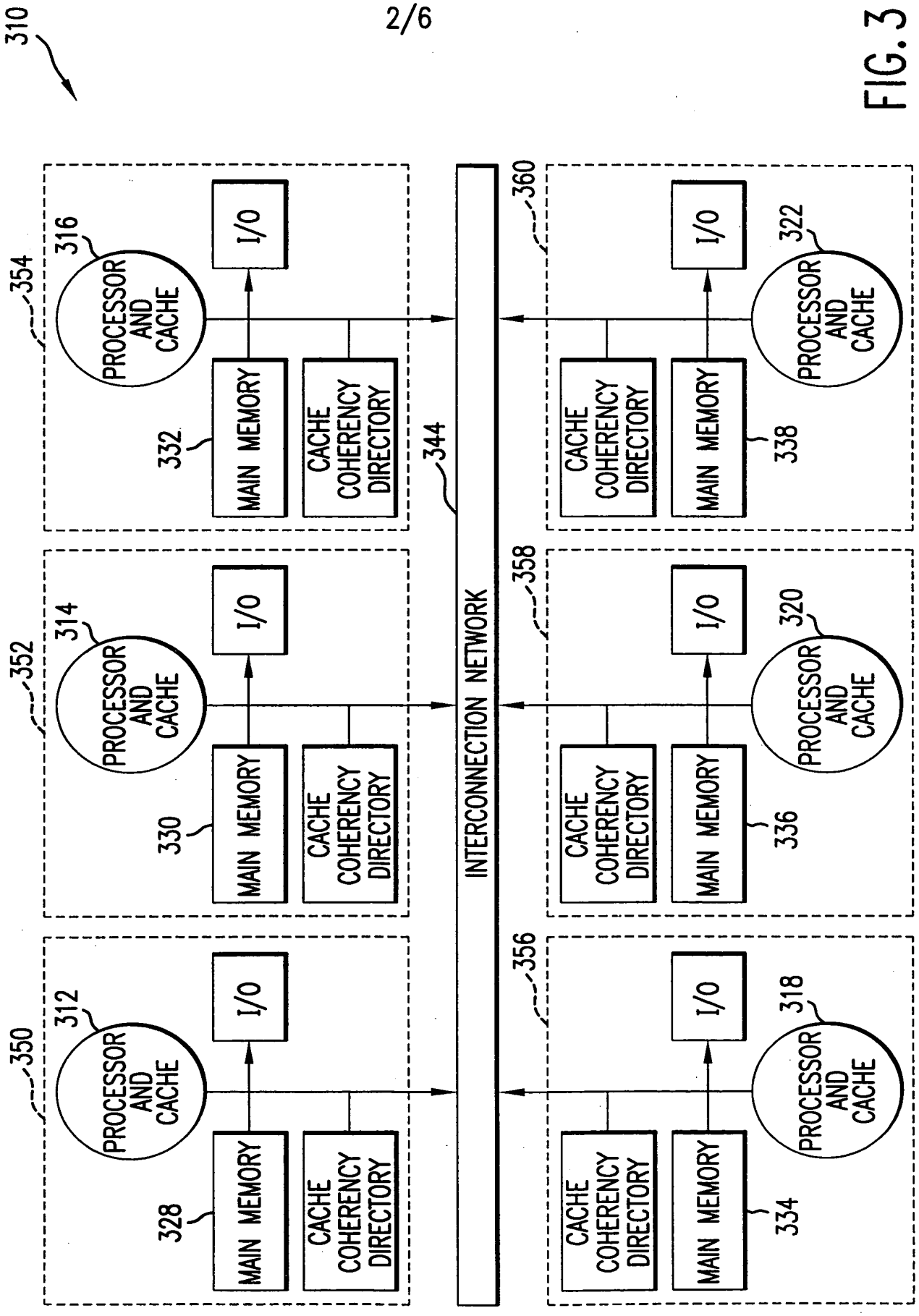
310
350
352
354
356
358
360
312
314
316
318
320
322
328
330
332
334
336
338
344
PROCESSOR AND CACHE
I/O
MAIN MEMORY
CACHE COHERENCY DIRECTORY
INTERCONNECTION NETWORK

FIG. 3

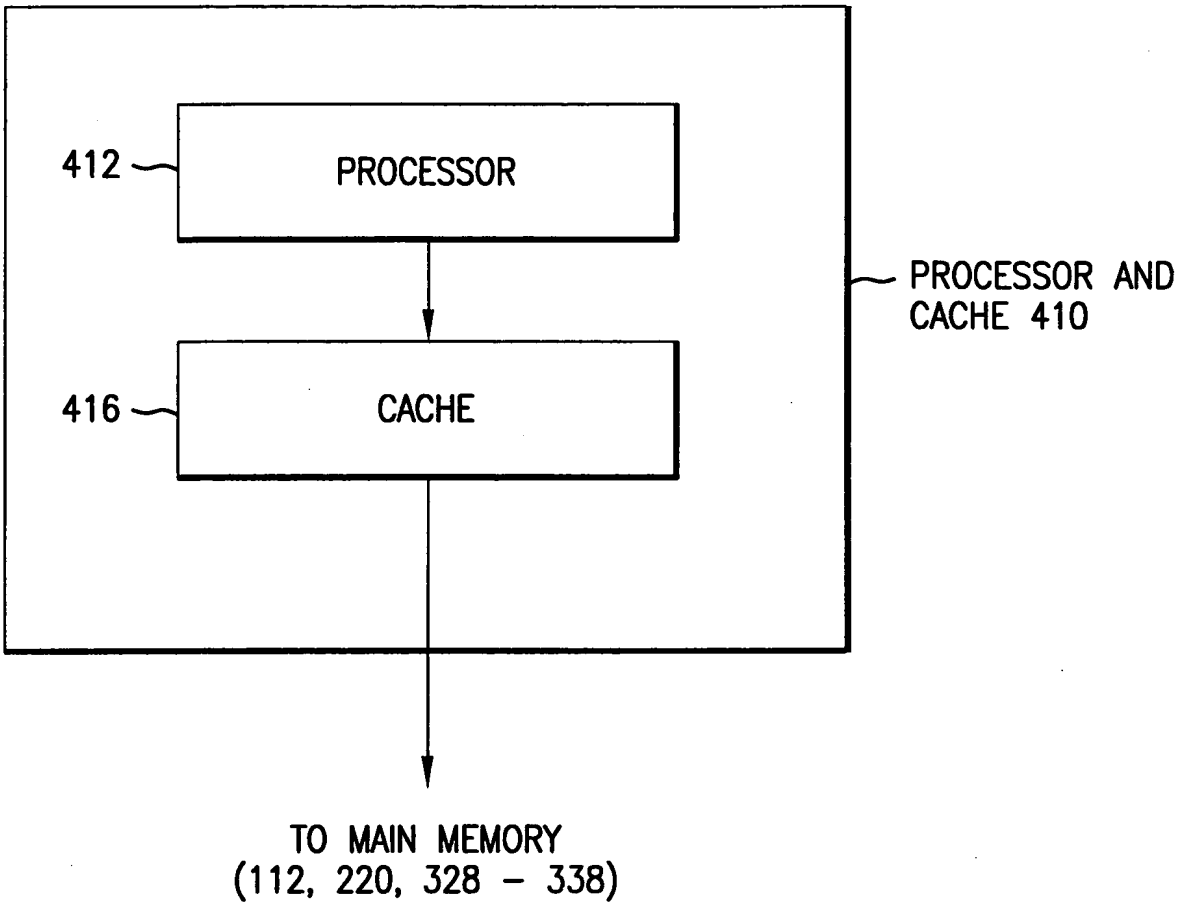
412
PROCESSOR
416
CACHE
PROCESSOR AND CACHE 410
TO MAIN MEMORY
(112, 220, 328 - 338)

FIG. 4

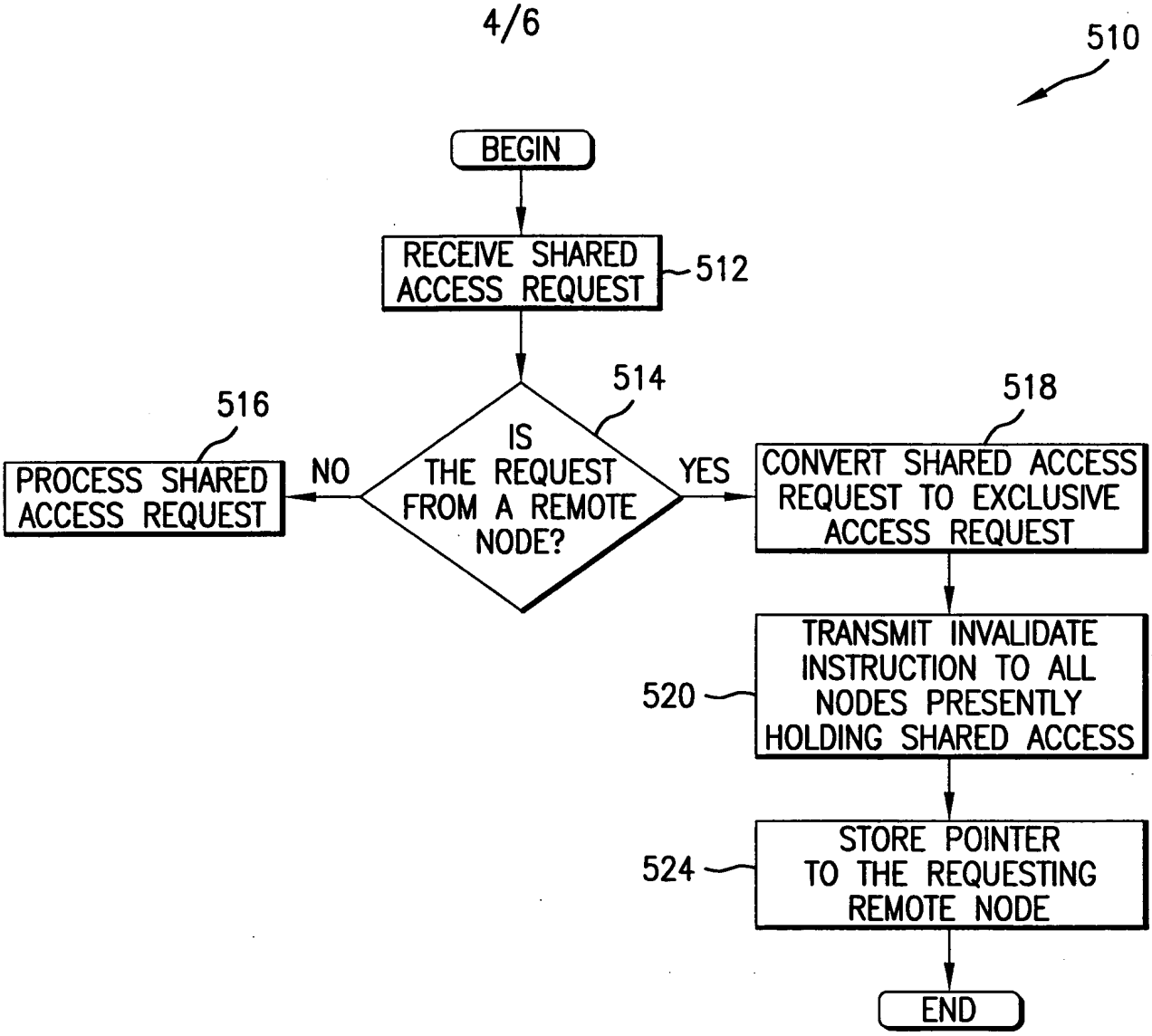
510
BEGIN
RECEIVE SHARED ACCESS REQUEST
512
514
IS THE REQUEST FROM A REMOTE NODE?
NO
YES
516
PROCESS SHARED ACCESS REQUEST
518
CONVERT SHARED ACCESS REQUEST TO EXCLUSIVE ACCESS REQUEST
TRANSMIT INVALIDATE INSTRUCTION TO ALL NODES PRESENTLY HOLDING SHARED ACCESS
520
STORE POINTER TO THE REQUESTING REMOTE NODE
524
END

FIG. 5a

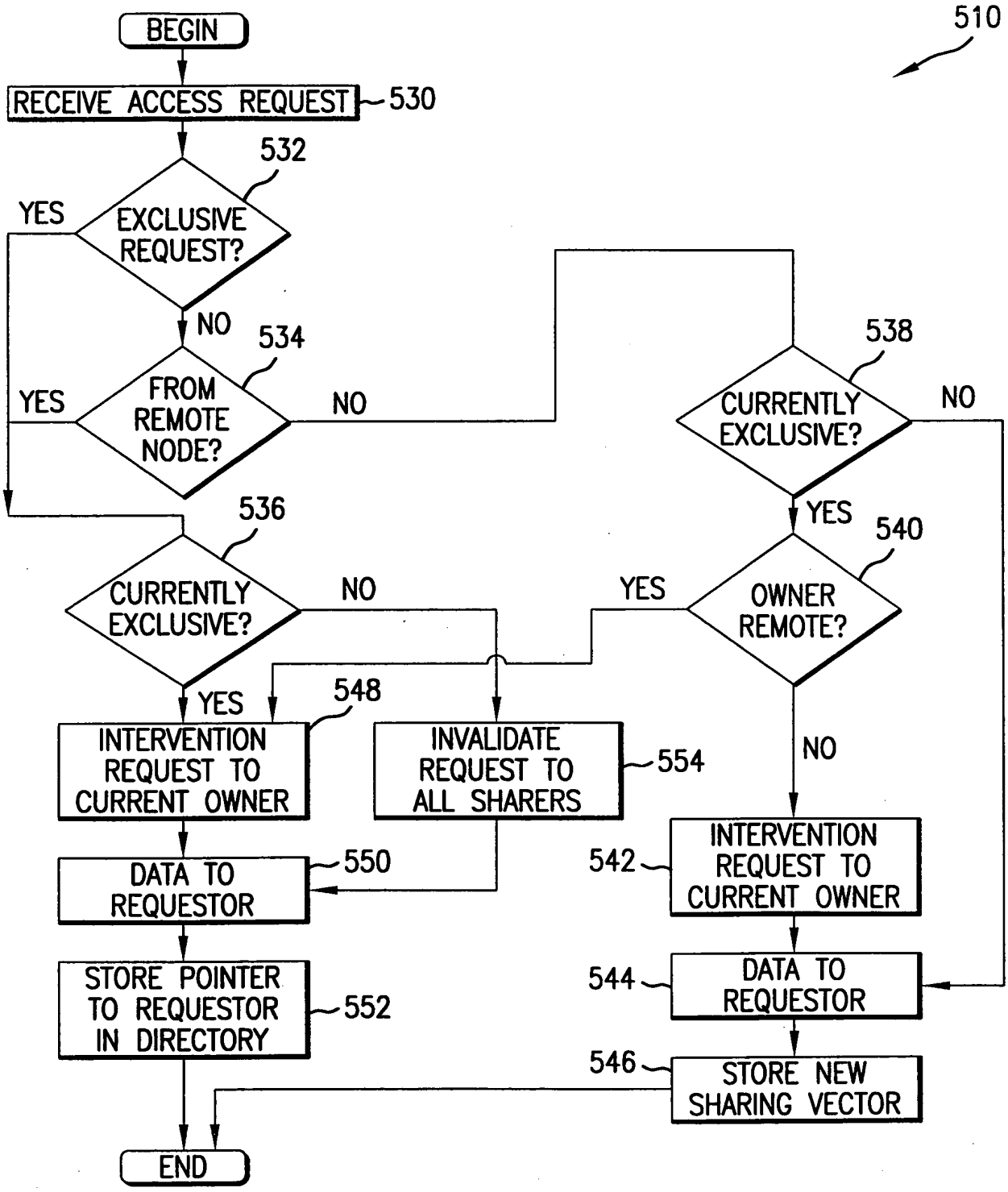
510
BEGIN
RECEIVE ACCESS REQUEST
530
532
EXCLUSIVE REQUEST?
YES
NO
534
FROM REMOTE NODE?
YES
NO
536
CURRENTLY EXCLUSIVE?
NO
YES
548
INTERVENTION REQUEST TO CURRENT OWNER
INVALIDATE REQUEST TO ALL SHARERS
554
DATA TO REQUESTOR
550
STORE POINTER TO REQUESTOR IN DIRECTORY
552
END
538
CURRENTLY EXCLUSIVE?
NO
YES
540
OWNER REMOTE?
YES
NO
542
INTERVENTION REQUEST TO CURRENT OWNER
544
DATA TO REQUESTOR
546
STORE NEW SHARING VECTOR

FIG. 5b

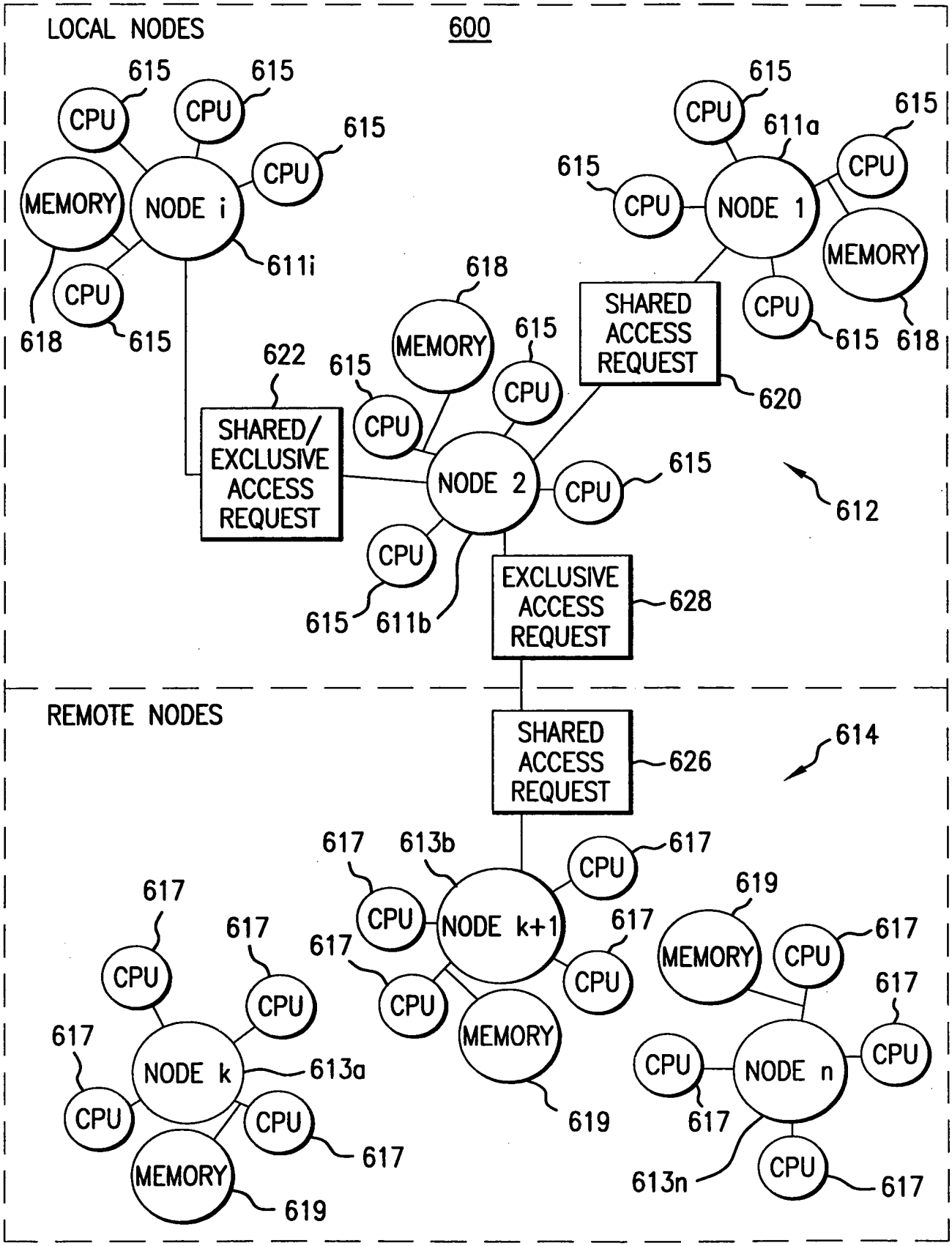
LOCAL NODES
600
REMOTE NODES
CPU
MEMORY
NODE i
NODE 1
NODE 2
NODE k
NODE k+1
NODE n
615
611i
611a
611b
618
622
SHARED/ EXCLUSIVE ACCESS REQUEST
SHARED ACCESS REQUEST
620
EXCLUSIVE ACCESS REQUEST
628
612
614
626
617
613a
613b
613n
619

FIG. 6